UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/751,261	12/29/2000	Prosenjit Ghosh	42390P10242	8967

7590 11/15/2004

John P. Ward
BLAKELY, SOKOLOFF, TAYLOR & ZAFMAN LLP
Seventh Floor
12400 Wilshire Boulevard
Los Angeles, CA 90025-1026

EXAMINER	
BOYD, JENNIFER A	

ART UNIT	PAPER NUMBER
1771	

DATE MAILED: 11/15/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/751,261	GHOSH, PROSENJIT	
	Examiner	Art Unit	
	Jennifer A Boyd	1771	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *23 August 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1, 3, 6 – 16, 19 – 23 and 26 – 28* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1, 3, 6 – 16, 19 – 23 and 26 – 28* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

1. The Applicant's Amendments and Accompanying Remarks, filed August 23, 2004, have been entered and have been carefully considered. Claims 4, 5, 17, 24 and 25 are amended and claims 1, 3, 6 – 16, 19 – 23 and 26 – 28 are pending. In view of Applicant's 37 CFR 1.131 Declaration which verifies that the present invention was conceived prior to November 2, 2000, the rejection as being anticipated by Webb (US 6,542,371) is withdrawn since it is disqualified as being prior art. However, after an updated search, additional prior art has been found which renders the invention as currently claimed unpatentable for reasons herein below.

2. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1, 3, 9 – 11, 14 – 16, 20 – 23 and 28 are rejected under 35 U.S.C. 102(b) as being anticipated by Deeney (US 5,783,862).

Deeney is directed to an electrically conductive material interface (Title).

As to claims 1, 10 and 20, Deeney teaches a thermal interface comprising a metallic mesh

or cloth for use between a heat source and a heat sink (column 3, lines 30 – 40). Deeney teaches that by using a metal mesh, good thermal conductivity is obtained when the fibers are pressed together to effectively form hundreds of thermal "vias". Reliable electrical connections are obtained at high pressure areas where the loops of the mesh contact the component (column 3, lines 1 – 10). Therefore, the thermal pad will provide a substantially continuous path of fibers between the two surfaces due to the pad/surface contact. It should be noted that metal is considered in the art to be malleable.

As to claims 3, 16 and 23, Deeney teaches that the mesh can comprise a variety of metals such as silver, copper and/or gold among others (column 3, lines 30 – 55).

As to claims 9, 14 and 28, Deeney teaches that the interface can comprise a mesh or cloth (column 3, lines 30 – 40). According to Complete Textile Glossary by Celanese Acetate, the term "mesh" is defined as "a broad term for fabric characterized by open spaces between the yarns. Mesh fabrics may be woven, knit, lace, net, crochet, etc." and the term "cloth" is defined as "a generic term embracing all fabrics and felts. Cloth may be formed of any textile fiber, wire, or other material, and includes any pliant woven, knit, felted, needled, sewn or otherwise formed". Therefore, mesh or cloth would encompass a woven fabric. Additionally, in Figure 2, it is shown that the fabric is a woven material.

As to claims 11 and 21, Deeney teaches that the thermal interface is for use between a heat source (e.g., IC die) and a heat sink. The Examiner equates the heat sink to Applicant's "thermal plate".

As to claims 15 and 22, Deeney teaches that the interface may be at least partially filled in the interstices with a semi-liquid substance such as silicone grease, paraffin or mineral-filled

paraffin (column 3, lines 30 – 40). The Examiner equates the semi-liquid substance to Applicant's "thermal medium".

5. Claims 1, 3, 6, 8, 10 – 11, 13, 16, 19 – 21, 23 and 27 are rejected under 35 U.S.C. 102(b) as being anticipated by Liberty (US 5,298,791).

Liberty is directed to a thermally conductive electrical assembly (Title).

As to claims 1, 10, and 20, Liberty teaches a thermally conductive interface material formed of a polymeric binder and one or more of thermal fillers (Abstract). Liberty teaches that the material may further incorporate one or more layers of a support material to increase the toughness, resistance to elongation and treating (column 5, lines 33 – 36). Liberty teaches that the support material may comprise a mesh cloth comprising various metals (column 6, lines 10 – 20). Liberty demonstrates in Figure 3 the use of the thermally conductive material between a heat source and a heat dissipater (column 3, lines 30 – 40). The Examiner equates the heat dissipater to Applicant's "first surface" and the heat source to Applicant's "second surface".

As to claims 3, 16 and 23, Liberty teaches that the support material may comprise a mesh cloth comprising various metals (column 6, lines 10 – 20).

As to claims 6 and 19, Liberty teaches that the thermally conductive material is formed of a polymeric binder (column 4, lines 54 – 58). Liberty notes that the pressure sensitive adhesive is used to allow for bonding directly to the adjacent surfaces of the heat source and heat sink without the need for retaining means such as screws, rivets, clamps etc (column 2, lines 5 – 20).

As to claims 8, 13 and 27, Liberty teaches that the support material may comprise one or more layers (column 5, lines 33 – 40). It should be noted that if more than one layer is used, the layers would be considered "stacked".

As to claims 11 and 21, Liberty teaches the use of the thermal interface between a source of heat and a heat sink (column 1, lines 15 – 25).

6. Claims 1, 3, 7, 9 – 10, 12, 14 – 16, 20, 22 – 23, 26 and 28 are rejected under 35 U.S.C. 102(e) as being anticipated by Chiu et al. (US 6,121,680).

The applied reference has a common assignee with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 102(e) might be overcome either by a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not the invention "by another," or by an appropriate showing under 37 CFR 1.131.

Chiu is directed to a mesh structure to avoid thermal grease pump-out in integrated circuit heat sink attachments (Title).

As to claims 1, 10 and 20, Chiu teaches an impregnated mesh pattern which may be made of a woven fabric (column 3, lines 10 – 20). Chiu teaches that the fabric may be made of metal (column 3, lines 20 – 23). Chiu teaches that the mesh is thin as possible to shorten the heat transfer between the integrated circuit 114 and the thermal element 128 (column 4, lines 1 – 5). The Examiner equates the integrated circuit to Applicant's "first surface" and the thermal element to Applicant's "second surface". Therefore, the thermal pad will provide a substantially

continuous path of fibers between the two surfaces due to the contact. It should be noted that metal is considered in the art to be malleable.

As to claims 3, 16 and 23, Chiu teaches that the mesh may be made of metal (column 3, lines 20 – 23).

As to claims 7, 12 and 26, Chiu teaches that the mesh may be an irregular mesh (column 3, lines 20 – 25). The Examiner equates irregular mesh to "random pattern".

As to claims 9, 14 and 28, Chiu teaches an impregnated mesh pattern which may be made of a woven fabric (column 3, lines 10 – 20).

As to claims 15 and 22, Chiu teaches that the mesh may be impregnated with a thermal grease (column 3, lines 15 – 25).

Response to Arguments

7. Applicant's arguments with respect to claims 1, 3, 6 – 16, 19 – 23 and 26 – 28 have been considered but are moot in view of the new ground(s) of rejection.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jennifer A Boyd whose telephone number is 571-272-1473. The examiner can normally be reached on Monday thru Friday (8:30am - 6:00pm).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Terrel Morris can be reached on 571-272-1478. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Jennifer Boyd
November 5, 2004

Ula Ruddock
Ula C. Ruddock
Primary Examiner
Tech Center 1700